

What is Medetomidine?

A veterinary anesthetic that is an alpha-2 adrenoceptor agonist not approved for use in humans. Sometimes referred to as “rhino tranq” or “mede.”

- Medetomidine is an emerging adulterant in [illicit drugs, drug paraphernalia, and overdoses](#). A related drug, [dexmedetomidine](#), is approved for use in humans.
- Structurally and pharmacologically similar to xylazine, another veterinary anesthetic in the illicit drug supply.
- Its high potency – [200- to 300-fold greater than xylazine](#) – and rapid geographic spread require clinical vigilance.

Medetomidine in the Ever-Changing Drug Supply

- Identified in Maryland's illicit opioid supply in [July 2022](#). By early 2024, it was linked to overdose clusters in [Philadelphia, Pittsburgh, and Chicago](#).
- Multiple factors cause changes in the illicit drug supply. Stay up to date with emerging trends by following [MDH's Rapid Analysis of Drugs program](#) and the [Rapid Drug Analysis and Research \(RaDAR\) program](#).

Key Clinical Features

Details	
Initial Effects	Pronounced sedation, bradycardia, hypotension
Withdrawal	Onset within hours; earlier than fentanyl Prolonged and includes severe hypertension (>200) and tachycardia (>140), as well as tremors, nausea, vomiting, agitation, and reduced mentation (e.g., staring, unable to talk)
Comparison to xylazine	More severe, longer-lasting effects due to higher potency of medetomidine. Not (yet) known to cause necrotic skin lesions associated with xylazine.

Warning Signs of Exposure:



Sedation



Heart-rate complications



Prolonged withdrawal

Management Strategies:

Management strategies align closely with existing protocols for [xylazine](#); however, medetomidine withdrawal could be more severe.

Medetomidine Withdrawal Management:

- Recommended higher than normal doses of clonidine (0.3mg PO and a clonidine 0.3mg transdermal patch). Other medications include gabapentin or hydroxyzine.
- Dexmedetomidine, a related drug, is sometimes used for more severe withdrawal in ICU settings. If hospitals have restrictions on dexmedetomidine as an “ICU only” medication, they can consider reclassifying it as allowable for a step-down level of care.

Opioid Withdrawal Management:

- Ensure adequate dosing of medications for opioid use disorder (MOUD; methadone and buprenorphine); suboptimal dosing may exacerbate withdrawal symptoms.

Use Naloxone, but it Will not Impact Medetomidine:

- Standard opioid overdose reversal agents, like naloxone, do NOT reverse the effects of medetomidine.
- Naloxone should still be used, given that it can improve breathing. However, sedation, bradycardia and hypotension can persist if medetomidine is present.

Clinical Takeaway



There are no unique treatment approaches for medetomidine. Exposures should be treated similarly to xylazine, ensuring robust medetomidine AND opioid withdrawal management strategies.

Additional Resources

- **Centers for Disease Control:**
 - [Severe Medetomidine Withdrawal Syndrome in Patients Using Illegally Manufactured Opioids — Pittsburgh](#)
 - [Suspected Medetomidine Withdrawal Syndrome Among Fentanyl-Exposed Patients — Philadelphia](#)
 - [Overdoses Involving Medetomidine Mixed with Opioids — Chicago](#)
- **Drug Enforcement Agency:**
 - [Medetomidine and Dexmedetomidine Submissions Increase Significantly](#)
- **Penn Medicine, Center for Addiction Medicine and Policy:**
 - [Medetomidine webinar recording](#)
 - [Fact sheet](#)